

**WHAT IS CLAIMED IS:**

1. A sprinkler head comprising a base adapted to be secured to a component supplying water under pressure; an arc adjustment ring rotatably mounted on said base; a nozzle and a stream deflector supported by an elongated stem carried by said base, said nozzle and said stream deflector cooperating to define an adjustable nozzle orifice; a water distribution plate secured to a shaft in said stem and located downstream of said nozzle; said stem and said nozzle axially movable relative to said base; a drive train operatively connected between said arc adjustment ring and said nozzle to rotate said nozzle relative to said stream deflector to thereby adjust said nozzle orifice between a pair of limit positions; said stem rotatable within said base upon over-rotation of said arc adjustment ring beyond either of said pair of limit positions.

2. The sprinkler head of claim 1 wherein said drive train is operable only when said stem and nozzle are in an extended position relative to said base.

3. The sprinkler head of claim 1 wherein said base has an interior surface provided with a plurality of axially extending, closely spaced ribs and said stem is formed at one end thereof with a radially extending flange engaged with said closely spaced ribs.

4. The sprinkler head of claim 3 wherein said radially extending flange is provided with a plurality of annularly spaced spring tabs, each tab having a radial projection adapted to engage said ribs, wherein said spring tabs serve to hold said stem against rotation upon the application to said arc adjustment ring of a normal range of torque sufficient to permit

rotation of said arc ring and nozzle between said limit positions, but permit over-rotation of said stem and nozzle relative to said base upon the application to said arc adjustment ring of excessive torque.

5. A sprinkler head comprising a base adapted to be secured to a sprinkler component;

a nozzle and a stream deflector supported in a stem mounted in said base for axial extending and retraction relative to said base, said nozzle having a first movable edge and said stream deflector having a second normally fixed edge cooperating to establish an adjustable arcuate discharge orifice defining a sprinkling pattern;

a water distribution plate supported on a shaft extending upwardly from said base, and adapted to be impinged by a stream emitted from the nozzle;

an arc adjustment ring rotatably mounted on said base, said arc adjustment ring operatively connectable with said nozzle for rotating said nozzle and first movable edge relative to said stream deflector and second normally fixed edge for adjusting an angular extent of said arcuate discharge orifice; and

means for adjusting said second normally fixed edge relative to said base and said sprinkler component to reorient said sprinkling pattern, said means implemented via said arc adjustment ring.

6. The sprinkler head of claim 5 and further comprising means for adjusting flow rate through said nozzle.

7. The sprinkler head of claim 5 wherein said deflector and said nozzle are shaped to provide an arcuate discharge orifice adjustable between about 90° and about 210°.

8. The sprinkler head of claim 5 wherein said deflector and said nozzle are shaped to provide an arcuate discharge orifice adjustable between about 210° and about 270°.

9. The sprinkler head of claim 5 wherein said shaft is normally stationary and said water distribution plate rotates relative to said shaft.

10. The sprinkler head of claim 9 wherein said water distribution plate is mounted for rotation about said shaft and formed with an interior chamber defined by upper and lower bearings through which said shaft extends, and an interior surface of the water distribution plate; a stator fixed to the shaft and located within the chamber; and wherein said chamber is at least partially filled with a viscous fluid.

11. The sprinkler head of claim 5 wherein said sprinkler component comprises a pop-up sprinkler assembly including a fixed housing and an extendable tube, said base secured to said extendable tube; and wherein said stem, nozzle, stream deflector, shaft and water distribution plate are movable axially relative to said base from an inoperative retracted position where said water distribution plate is seated on said arc adjustment ring, to an operative extended position where said water distribution plate is axially spaced from said base.

12. The sprinkler head of claim 11 including a first coil spring radially outward of a stream emitted from the nozzle, said first coil spring having one end engaging a downstream end of said stem and an opposite end engaging said arc adjustment ring.

13. The sprinkler head of claim 12 wherein said first coil spring biases said water distribution plate toward said inoperative retracted position.

14. The sprinkler head of claim 11 wherein said arc adjustment ring is operatively connectable with said nozzle only when said water distribution plate is in said operative extended position.

15. The sprinkler head of claim 11 wherein in use, said extendable tube extends out of said fixed housing before said water distribution plate moves to said operative extended position.

16. A sprinkler head comprising a base;  
an elongated stem supported within the base;  
a nozzle and a stream deflector supported within the stem, said nozzle and stream deflector cooperating to define an arcuate orifice;  
a water distribution plate supported on a shaft extending upwardly from said base, said water distribution plate located in axially spaced relationship to said nozzle and adapted to be impinged by a stream emitted from the nozzle;

a throttle control member secured to an upstream end of said shaft such that rotation of said shaft causes said throttle control member to move relative to a flow restriction portion, to thereby adjust flow rate through said nozzle and a throw radius of the stream emitted from said nozzle, said throttle control member engageable with a seat in a maximum restriction position; and

said throttle control member having flexible tabs extending radially therefrom for interaction with axially extending ribs on an interior surface of said stem to thereby constrain said throttle control member against

rotation when said shaft is rotated and to thereby move said throttle control member axially toward or away from said maximum restriction position; said flexible tabs permitting rotation of said throttle control member with said shaft upon over-rotation of said shaft.

17. The sprinkler head of claim 16 wherein said throttle control member and said flow restriction seat are configured to always permit a predetermined minimum flow of water through said nozzle.

18. The sprinkler head of claim 17 wherein said predetermined minimum flow is sufficient to maintain rotation of said water distribution plate.

19. The sprinkler head of claim 16 wherein a distal end of said shaft projects from said water distribution plate to thereby allow a user to rotate said shaft to adjust said flow rate.

20. The sprinkler head of claim 19 wherein said distal end of said shaft is formed with a groove adapted to receive a tool for rotating said shaft.

21. The sprinkler head of claim 16 wherein said water distribution plate is formed with an interior chamber defined by upper and lower bearings through which said shaft extends, and an interior surface of the rotor plate; a stator fixed to the shaft and located within the chamber; and wherein said chamber is at least partially filled with a viscous fluid.

22. The sprinkler head of claim 16 wherein said sprinkler component comprises a pop-up sprinkler assembly including a fixed

housing and an extendable tube, said base located on an upper end of said extendable tube; and wherein said stem, nozzle, stream deflector, shaft and water distribution plate are movable axially relative to said base from an inoperative retracted position where said water distribution plate is seated on said base, to an operative extended position where said water distribution plate is axially spaced from said base.

23. The sprinkler head of claim 22 including a first coil spring radially outward of a stream emitted from the nozzle, wherein said coil spring biases said water distribution plate toward the inoperative position.

24. The sprinkler head assembly of claim 23 and wherein in use, said extendable tube extends out of said fixed housing before said water distribution plate moves to said operative extended position.

25. The sprinkler head of claim 16 wherein said throttle member and said stem are provided with cooperating guide elements for preventing rotation of said throttle member.

26. A sprinkler head comprising a base;  
a nozzle and a stream deflector supported within the base, said nozzle having a first moveable edge and deflector having a second normally fixed edge cooperating to define an adjustable arcuate discharge orifice;

a water distribution plate supported on a shaft extending upwardly from said stem, said water distribution plate having a plurality of water distribution grooves therein located in axially spaced relationship to said nozzle and adapted to be impinged by a stream emitted from the nozzle;

an arc adjustment ring rotatably mounted on said base, said arc adjustment ring operatively connectable with said nozzle for rotating said nozzle and first movable edge relative to said stem and second normally fixed edge for adjustment of said arcuate discharge orifice;

means operable through said arc adjustment ring for adjusting said second normally fixed edge to reorient said sprinkling pattern; and

a throttle control member secured to an upstream end of said shaft such that rotation of said shaft causes said throttle to move axially relative to a flow restriction seat portion, to thereby adjust flow rate through said nozzle, said throttle control member engageable with said seat in a maximum restriction position; and means for permitting rotation of said throttle control member with said shaft upon over-rotation of said shaft.

27. A sprinkler head comprising a base adapted to be secured to a component supplying water under pressure; an annular ring rotatably mounted on said base so as to be accessible to a user; a nozzle and a stream deflector supported by an elongated stem carried by said base, said nozzle and said stream deflector cooperating to define a nozzle orifice; a water distribution plate secured to a shaft in said stem and located downstream of said nozzle; said stem and said nozzle axially movable relative to said base; a drive train operatively connected between said annular ring and said nozzle to rotate said nozzle relative to said stream deflector between a pair of limit positions; said stem rotatable within said base upon over-rotation of said annular ring beyond either of said pair of limit positions to thereby prevent damage to internal components of the sprinkler head.